

5.8.1 Uncertainty Assessment

Capital cost, capacity factor, and fuel cost were the major variables identified to quantify economic uncertainty. Black & Veatch calculated an uncertainty band for a representative project for each technology based on the assumptions shown in Table 5-6. The values in this table represent a single standard deviation from the mean value. The ranges of potential values were presented and explained to the RETI Uncertainty Team. They are not meant to be precise measures, but rather relative ranges that reflect potential differences in the assessment of the technologies and resources. For example, the capital cost range for geothermal is highest due to the limited site information available at this level, and the large amount of capital required for the relatively unknown resource development phase. In contrast, capital costs for solar photovoltaics are relatively predictable, as most costs are associated with module procurement. When possible, the uncertainty ranges for the resource values were linked to the reported standard error in the resource datasets (wind and solar).

Table 5-6. Potential Ranges of Uncertainty for Major Resource Variables.						
	Capital Cost		Capacity Factor		Fuel Cost	
	Low	High	Low	High	Low	High
Geothermal	-15%	15%	-10%	10%	-20%	20%
Biomass	-10%	10%	-10%	10%		
Wind	-10%	10%	-10%	10%		
Solar Thermal	-10%	10%	-10%	10%		
Solar PV	-5%	5%	-5%	5%		
Note: Uncertain ranges represent a single standard deviation from the mean value.						

The uncertainty ranges shown are meant to capture the uncertainty when comparing one renewable project against another, rather than a general uncertainty range. For example, all wind projects are likely to be affected relatively equally by changes in wind turbine costs, so the uncertainty estimate does not include this variable. In contrast, estimates for balance of plant costs (roads, gen-ties, construction, etc.) for the wind projects are relatively uncertain at this level of analysis and may *independently* vary between projects substantially. The uncertainty range reflects this variability.

The impact these cost, capacity, and fuel cost ranges have on calculated levelized generation cost was then determined. Mean values were calculated for the major variables for a typical project for each of the resource types. The uncertainty ranges

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